Relative Costs of Preoperative Tests: Choosing Wisely

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September 20, 2014

Disclosures
- No financial relationship with pharmaceutical or device manufacturing companies

Outline
- The problem of healthcare overutilization
- History of the “Choosing Wisely” campaign
- ASA Top 5 list
- Cataract surgery example
US National Health Expenditures as a Share of GDP, 1960-2021

Source: Centers for Medicare and Medicaid Services.

Research interest

• How to lower healthcare costs while maintaining the quality of care delivered?

Definitions

• Overuse: delivery of health care for which the risks outweigh the benefits
  – Use of antibiotics to treat viral respiratory syndromes

• Underuse: failure to deliver health care for which the benefits outweigh the risks
  – Use of an aspirin in patients with coronary disease

• Misuse: delivery of the wrong care
  – Inappropriate medications prescribed in elderly

Overuse is a problem

• Up to 30% of US health spending attributed to “overuse” spending
  – $158-$226 billion in 2011

• But difficult to define, study, and document
  – Not easy to define “appropriate care”
  – Most quality metrics incorporate underuse measures, but not overuse

Berwick’s “Wedges” Model for US Health Care

- "Business as usual"
- Failure of care delivery
- Failure of care coordination
- Over-treatment
- Administrative complexity
- Pricing failure
- Fraud and abuse
- Growth in healthcare expenditures = GDP growth

Updated Hippocratic Oath?

  - Describes professional responsibilities in return for the privilege of self-regulation, beyond just caring for the individual patient

Good Stewardship Project

- National Physicians Alliance 2009
- “5 things to question”
- 5 interventions in internal medicine, family medicine, and pediatrics (15 items total)
- Approximate annual cost of $6.76 billion in 2011

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“Choosing Wisely”

- Based on Physician Charter and NPA’s Good Stewardship Initiative
- ABIMF, Consumer Reports, and 9 medical specialty societies in 2012
- Five tests or procedures
- Now over 250 recommendations from over 50 specialty societies


“Choosing Wisely” in Anesthesia

1. Baseline laboratory studies in healthy patients without significant systemic disease (ASA I or II) - when blood loss (or fluid shifts) is expected to be minimal
   - CBC, BMP or CMP, coagulation studies


2. Baseline diagnostic cardiac testing or cardiac stress test in asymptomatic stable patients with known cardiac disease (eg CAD, valvular disease) undergoing low-risk or moderate-risk non-cardiac surgery
   - TTE, TEE, stress test

Pop quiz #1

Approximately how much did Medicare pay for a CBC in 2014?

A. $10.00
B. $25.00
C. $50.00
D. $100.00

Medicare reimbursement

Laboratory tests | 2014 Medicare Price List
---|---
CBC
BMP
CMP
Coags (Plt, PT, PTT)

Pop quiz #2

Approximately how much did Medicare pay for an EKG in 2014?

A. $15.00
B. $30.00
C. $60.00
D. $90.00

Medicare reimbursement

Cardiac tests | 2014 Medicare Price List
---|---
EKG
TTE
TEE
Stress EKG
Stress TTE
Pop quiz #3

Approximately how much did Medicare pay for a TTE in 2014?

A. $50.00  
B. $150.00  
C. $250.00  
D. $350.00

Medicare reimbursement

**Cardiac tests** | 2014 Medicare Price List
--- | ---
EKG | $16.84
TTE | 
TEE | 
Stress EKG | 
Stress TTE | 

Other tests | 2014 Medicare Price List
--- | ---
LFT’s | 
CXR (1 or 2 views) | 
PFT’s (spirometry) | 
ABG | 
U/A | 
T&S | 

Principles behind recommendation

- Testing decisions should be based on a good history and physical evaluation of effort tolerance
- Routine testing rarely changes management, and rarely affects outcome
How do we implement this?

- More than 2/3 of surgeries in the US are ambulatory
- Ambulatory, by definition = low-risk
- Focus on routine preoperative testing in healthy ASA I and II patients undergoing low-risk surgery


Cataract surgery example

Projected number of cataracts


The New England Journal of Medicine

THE VALUE OF ROUTINE PREOPERATIVE MEDICAL TESTING BEFORE CATARACT SURGERY


ABSTRACT

Background Routine preoperative medical testing is commonly performed in patients scheduled to undergo cataract surgery, although the value of such testing is uncertain. We performed a study to determine whether routine testing helps reduce the incidence of intraoperative and perioperative medical complications.

Methods We randomly assigned 15,507 elective cataract operations in 16,018 patients at nine centers to be preceded or not preceded by a standard battery of medical tests (electrocardiography, complete blood count, and measurement of serum levels of electrolytes, urea nitrogen, creatinine, and glucose), in addition to a history-taking and physical examination. Adverse medical events and interventions on the day of surgery and during the seven days after surgery were recorded.

Results Medical outcomes were assessed in 9,486 patients who underwent 9,625 cataract operations that were not preceded by routine testing and in 5,032 patients who underwent 5,393 operations that were preceded by routine testing. The mean inci-
Hypothesis

• Routine preoperative testing prior to cataract surgery among Medicare patients continues to be a common occurrence and comprises a substantial portion of Medicare expenditures for patients undergoing cataract surgery.

Specific aim

• To determine the prevalence, cost and factors associated with routine preoperative testing prior to cataract surgery in Medicare patients.

Methods

• Data source: Medicare research identifiable files 2010-2011
• Study cohort: 448,531 Medicare beneficiaries who had index cataract surgery in the year 2011
• Definition of preop test: CBC, chem panels, coags, U/A, EKG, TTE, cardiac stress test, CXR, PFT’s, ABG’s if test occurred within 30 days of index surgery.

Tests and office visits per beneficiary per month

Chen et al. Unpublished data.
Variation in testing and office visits among care teams

ROC curves comparing models predicting preoperative testing

“High-use” providers and excess testing

Which tests?

<table>
<thead>
<tr>
<th>Test name</th>
<th>% of Beneficiaries</th>
<th>No. Tests Performed</th>
<th>Annual cost (USD in mil)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMP, CMP</td>
<td>36.4</td>
<td>261,871</td>
<td>$3.0</td>
</tr>
<tr>
<td>CBC</td>
<td>29.9</td>
<td>157,332</td>
<td>$1.6</td>
</tr>
<tr>
<td>EKG</td>
<td>28.0</td>
<td>166,676</td>
<td>$2.6</td>
</tr>
<tr>
<td>Coags</td>
<td>10.7</td>
<td>87,210</td>
<td>$0.5</td>
</tr>
<tr>
<td>Cardiac stress test</td>
<td>1.4</td>
<td>17,866</td>
<td>$4.0</td>
</tr>
<tr>
<td><strong>All tests</strong></td>
<td><strong>52.9</strong></td>
<td><strong>816,077</strong></td>
<td><strong>$16.5</strong></td>
</tr>
</tbody>
</table>

*Includes U/A, CXR, TTE, PFTs, T&S, ABG, not shown individually N=237,125

Chen et al. Unpublished data.
Why do physicians order unnecessary tests?

- Practice tradition
- Belief that other physicians want the tests done
- Medicolegal concerns
- Concern about surgical delay or cancellation
- Lack of awareness of evidence and guidelines


Limitations to “Choosing Wisely” recommendations

- Many participating societies have named other specialties’ services as low-value, rather than target their own revenue-generating services
- Listed items may not be highest impact in terms of cost-savings
- But it’s a good starting point for future efforts

Take-home points

- Avoid routine preoperative testing in healthy (ASA I and II) patients undergoing low-risk surgery
- Even though the amount paid for each individual test may not seem high, significant cost savings can be achieved by reducing the total number of tests ordered as well as avoiding unnecessary follow up of abnormal test results

A little goes a long way

"Business as usual"
- Failures of care delivery
- Failures of care coordination
- Routine preop testing
- Administrative complexity
- Pricing failures
- Fraud and abuse

"Stabilization Triangle"
- Growth in healthcare expenditures = GDP growth

Acknowledgments

• R. Adams Dudley, Adrian Gelb, Mervyn Maze
• Merlin Larsen and Spencer Yost
• Foundation for Anesthesia Education and Research
• UCSF Department of Anesthesiology